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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,947	05/22/2006	Anja Gerhard	14113-00010-US	3744
23416 7590 09/16/2009 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER WALFORD, NATALIE K				
ART UNIT 2879		PAPER NUMBER		
MAIL DATE 09/16/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/579,947

**Applicant(s)**

GERHARD ET AL.

**Examiner**

NATALIE K. WALFORD

**Art Unit**

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 6-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s) Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s) Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 3, 2009 has been entered.

### ***Response to Amendment***

The Amendment, filed on August 3, 2009, has been entered and acknowledged by the Examiner. Cancellation of claims 4-5 has been entered. Claims 1 and 6-27 are pending in the instant application.

### ***Drawings***

The Examiner would like to remind the Applicant that the objection to drawings is still present. However, the Examiner understands that the Applicant is in the process of submitting drawings.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6-10, 12-13, 15, and 17-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriyama et al. (US PUB 2004/0106006) in view of D'Andrade et al. (US 7,009,338).

Regarding claim 1, Eriyama discloses organic electroluminescent device in figure 1 comprising an anode (item 2), a cathode (item 7) and at least one emission layer (item 5) comprising at least one matrix material which is doped with at least one phosphorescent emitter (paragraphs 9 and 120), characterized in that the emission layer on the anode side is directly adjacent to an electrically conductive layer (item 4), wherein both said at least one matrix material and said at least one phosphorescent emitter are low-molecular-weight defined compounds having a molecular weight of less than 10,000 g/mol (paragraph 33 and 120), and wherein said electrically conductive layer is said anode or an organic hole-injection layer (paragraph 91), but does not expressly disclose that the organic hole-injection layer comprises a doped conductive polymer or a doped triarylamine derivative, as claimed by Applicant. D'Andrade is cited to show an organic electroluminescent device in figure 1 with a hole injection layer that is made from a variety of materials, including copper phthalocyanine or a doped conductive polymer (PEDOT) (column 9, lines 44-51). D'Andrade teaches that these materials are effective in promoting injection of holes in the device (column 9, lines 49-51).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Eriyama's invention to include the organic hole-injection layer comprising a doped conductive polymer or a doped triarylamine derivative as suggested by D'Andrade for effectively promoting the injection of holes into the device.

Regarding claim 6, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that it comprises further layers (Eriyama; items 3 and 6).

Regarding claim 7, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to Claim 6, characterized in that the further layers are one or more hole-blocking layers and/or electron-transport layers and/or electron-injection layers (Eriyama; item 6).

Regarding claim 8, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to 1, characterized in that the emission layer is directly adjacent to the electron- transport layer without the use of a hole-blocking layer (Eriyama; see FIG. 1).

Regarding claim 9, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the emission layer is directly adjacent to the cathode or the electron-injection layer without the use of a hole-blocking layer and without the use of an electron-transport layer (Eriyama; see FIG. 1).

Regarding claim 10, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that more than one emission layer is present (Eriyama; items 3, 4, and 6).

Regarding claim 12, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the phosphorescent emitter present is a compound which contains at least one atom having an atomic number of greater than 36 and less than 84 (Eriyama; paragraph 118).

Regarding claim 13, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to Claim 12, characterized in that the phosphorescent emitter comprises at least one element selected from molybdenum, tungsten, rhenium, ruthenium, osmium, rhodium, iridium, palladium, platinum, silver, gold or europium (Eriyama; paragraph 118).

Regarding claim 15, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the glass transition temperature  $T_g$  of the matrix material is greater than  $100^{\circ}\text{C}$  (Eriyama; paragraph 64).

Regarding claim 17, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the lowest triplet energy of the matrix material is between 2 and 4 eV (Eriyama; see FIG. 1). The Examiner notes that since the matrix material claimed by the Applicant is the same as disclosed by Eriyama, it would inherently have these properties.

Regarding claim 18, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the matrix material is an electron-conducting compound (Eriyama; see FIG. 1). The Examiner notes that since the matrix material claimed by the Applicant is the same as disclosed by Eriyama, it would inherently have these properties.

Regarding claim 19, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to Claim 18, characterized in that the matrix material exhibits predominantly reversible reduction or forms predominantly stable free-radical anions

(Eriyama; see FIG. 1). The Examiner notes that since the matrix material claimed by the Applicant is the same as disclosed by Eriyama, it would inherently have these properties.

Regarding claim 20, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the electron mobility of the matrix material is between  $10^1$  and  $1 \text{ cm}^2/\text{V.s}$  (Eriyama; see FIG. 1). The Examiner notes that since the matrix material claimed by the Applicant is the same as disclosed by Eriyama, it would inherently have these properties.

Regarding claim 21, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the matrix material is ketone, imine, phosphine oxide, phosphine sulfide, phosphine selenide, phosphazene, sulfone or sulfoxide (Eriyama; paragraphs 67-68).

Regarding claim 22, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to Claim 21, characterized in that the matrix materials is ketone, phosphine oxide or sulfoxide are selected from the classes of ketones, phosphine oxides and sulfoxides (Eriyama; paragraph 67-68).

Regarding claim 23, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that one or more layers are coated by a sublimation process. The Examiner notes that regarding claim 23, the claim is directed to the method of manufacturing an organic electroluminescent device, in view of an absence of a showing that the method imparts distinctive structural characteristics to the final product, the limitations directed to the method of manufacturing are not germane to the issue of patentability of the device.

Regarding claim 24, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that one or more layers are coated by the organic vapour phase deposition (OVPD) process or with the aid of carrier-gas sublimation. The Examiner notes that regarding claim 24, the claim is directed to the method of manufacturing an organic electroluminescent device, in view of an absence of a showing that the method imparts distinctive structural characteristics to the final product, the limitations directed to the method of manufacturing are not germane to the issue of patentability of the device.

Regarding claim 25, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that one or more layers are coated by the LITI (light induced thermal imaging) process. The Examiner notes that regarding claim 25, the claim is directed to the method of manufacturing an organic electroluminescent device, in view of an absence of a showing that the method imparts distinctive structural characteristics to the final product, the limitations directed to the method of manufacturing are not germane to the issue of patentability of the device.

Regarding claim 26, the combined reference of Eriyama and D'Andrade disclose organic solar cell which comprises the organic electroluminescent device as claimed in claim 1 cell, characterized in that the structure corresponds to one or more of Claims 1 to 25. The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Hence, it is not germane to the issue of patentability.

Regarding claim 27, the combined reference of Eriyama and D'Andrade disclose organic laser diode which comprises the organic electroluminescent device as claimed in claim 1 diode,

characterized in that the structure corresponds to one or more of Claims 1 to 25. The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Hence, it is not germane to the issue of patentability.

Claims 11, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eriyama et al. (US PUB 2004/0106006) in view of D'Andrade et al. (US 7,009,338) in further view of Lecloux et al. (US PUB 2003/0096138).

Regarding claim 11, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, but does not expressly disclose that the emission layer has a layer thickness of 1 to 300 nm, as claimed by Applicant. Lecloux is cited to show an organic electroluminescent device in figure 6 with an emission layer (item 130) that has a thickness of 1 to 300 nm (paragraph 90). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the emission layer have a layer thickness of 1 to 300 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Regarding claim 14, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, but does not expressly disclose that the degree of doping of the phosphorescent emitter in the matrix is 0.5 to 50%, as claimed by Applicant. Lecloux is cited to show an organic electroluminescent device in figure 6 that has a phosphorescent emitter (item 130) that has been doped between 0.5 to 50% (paragraph 29).

Lecloux teaches that having this percentage do not need to be in a solid matrix diluent in order to be effective (paragraph 77).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined reference of Eriyama and D'Andrade to include the degree of doping of the phosphorescent emitter in the matrix is 0.5 to 50% as suggested by Lecloux for the percentage not needing to be in a solid matrix diluent in order to be effective.

Regarding claim 16, the combined reference of Eriyama and D'Andrade disclose organic electroluminescent device according to claim 1, characterized in that the matrix material has an absorbance of less than 0.2 in the visible spectral region between 380 nm and 750 nm (Eriyama; see FIG. 1), but does not expressly disclose that the film thickness is 30 nm, as claimed by Applicant. Lecloux is cited to show an organic electroluminescent device in figure 6 with an emission layer (item 130) that has a thickness of 1 to 300 nm (paragraph 90). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the emission layer have a layer thickness of 1 to 300 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 and 6-27 have been considered but are moot in view of the new ground(s) of rejection.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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